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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
|-----------------|-------------|----------------------|---------------------|

09/028,456 02/24/98 OHASHI

Y JAO-40656

EXAMINER

MMC2/0228

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THAILL

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

02/28/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/028,456

Applicant(s)

OHASHI, YASUhide

Examiner

Luan Thai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on December 21, 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24, 25, 30, 32-36, 40-43 and 45-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-25, 30, 32-36, 40-43, 45-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☒ Notice of References Cited (PTO-892)
- 15) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

- 17) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: _____.

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DETAILED ACTION

This Office action is responsive to the amendment filed December 21, 2000.

Claims **24-25, 30, 32-36, 40-43, 45, and 46-47** are pending in this application.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 24 and 34-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Michii (5,252,853 of record).

Michii discloses (see figure 2-3) a semiconductor device comprising a chip 1 having a plurality of signal pads 4, a plurality of power source and grounding pads 3-2, being arranged in lines (see figure 2). It is apparent from Michii's figures 2-3 that signal pads 4 are disposed in areas closer to the left and right edges of the semiconductor chip than the power source and grounding pads 3-2 (excluded the top power source and grounding pads 3-2 and the bottom power source and grounding pads 3-2, figure 2); a flexible substrate 9 having an opening formed therein, the flexible substrate having a grounding common lead 6 connected to the grounding pads 2, a power common lead 7 connected to the power source pads 3, wherein middle portions of power and

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grounding leads 7-6 being continuously positioned inside the opening, and end portions of power and grounding leads 7-6 being formed on the flexible substrate 9.

3. Claims 25, 32-33, and 46-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Niki et al. (4,967,261 of record), Hayward et al. (4,801,999 of record), or Michii (5,252,853 of record).

Regarding claim 25, Niki et al. disclose (see figures 2-9, specifically see figures 2a, 3, 6a, and 7) a semiconductor device comprising: a semiconductor chip 1 having a plurality of pads 1a; a flexible substrate 3a having an opening formed therein, the flexible substrate having a common lead 32 which has an electrical connection branch 32b connected to one of the pads 1a; a middle portion of the common lead 32 continuously being positioned inside the opening without connection to the pads, and end portions of the common lead 32 being formed on the flexible substrate 3a (see figure 2a).

Regarding claims 32-33 and 46-47, Niki et al. disclose all the limitations of the claimed invention as detailed above and further disclose the flexible substrate 3a having a plurality of leads (i.e., leads 40-41-42-43-44-45, see figure 2a), wherein all of leads 40-41-42-43-44-45 protrude in the opening in a direction different from the a direction in which the common lead 3d protrudes in the opening; a portion of the electrical connection branch 32b being positioned in the opening and an other portion of the electrical connection branch 32b being formed on the flexible substrate 3a, wherein the electrical connection branch 32b and the leads 40-45 protrude in the opening in the same direction (see figure 2a).

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Michii (see figures 2-4) and Hayward et al. (figures 1-12, Col. 3, lines 36+, Col. 4, lines 1-68) also teach a structure identical to applicant's claimed structure. Therefore, claims **25**, **32-33**, and **46-47** are also rejected under 35 U.S.C. 102(b) as being anticipated by Hayward et al. (4,801,999) and Michii (5,252,853) separately for the similar reasons detailed above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 30, 36, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niki et al. (4,967,261 of record) and Michii (5,252,853 of record).

Regarding claims 30 and 40, Niki et al. disclose all the features of the claimed invention as detailed above except for a middle portion of the common lead positioned inside the opening being wider than the other leads. Forming a common lead (i.e., power lead or grounding lead) to be wider than other leads (i.e., signal leads) is conventional in the semiconductor art in order to improve the current carrying capacity of the common lead. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the common lead wider than the signal leads for Niki's device in order to improve the current flow in the common lead. In addition, it would have been an obvious matter of design choice to form a lead with different sizes

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since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

Regarding claim 36, Niki et al. disclose a semiconductor chip, comprising: a plurality of signal and power source pads 1a. Niki et al. fail to disclose there is a grounding pad and the power and grounding pads are larger than the signal pads. Although Niki et al. does not specifically disclose the ground pad, this feature is taken to be inherent in the device since a means of power source and signal pads have been disclosed (Col. 7, lines 56+) and it is apparent that the grounding source pad must be present for the device to function as intended. Furthermore, forming a power source pad and a grounding pad larger than the signal pads on a semiconductor chip for improving the current flow in the power pads is conventional in semiconductor art. Note that Atsushi (JP 08316270, figure 2) and Inoue (JP 01289276, figures 1 and 3) are cited to support the well known position. Moreover, it would have been an obvious matter of design choice to form the power source pad or the grounding pad of the semiconductor chip being larger than the signal pad since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

Michii (figures 2-4) also teaches a structure identical to Niki et al. structure device. Therefore, claims **30, 36, and 40** are also rejected under 35 U.S.C. 103(a) as being unpatentable over Michii (5,252,853) for the similar reasons detailed above.

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6. Claims 41-43 and 45, are rejected under 35 U.S.C. 103(a) as being unpatentable over Niki et al. (4,967,261 of record) and Michii (5,252,853 of record) in view of Atsushi (JP 08316270, figures 2, 4, and 5, of record).

Niki et al. disclose (see figure 2a) a flexible substrate 3a having an opening formed therein, comprising: a common lead 33, wherein a middle portion of the common lead is continuously positioned inside the opening, and both end portions of the common lead 33 are formed on the flexible substrate 3a. Similarly, Michii discloses (see figures 2-4) a flexible substrate 9 having an opening formed therein, comprising: a common lead 6 having a middle portion being continuously positioned inside the opening, and both end portions of the common lead 6 being formed on the flexible substrate 9. Niki et al. and Michii fail to disclose more than one stress absorbing portion being formed in the middle portion of the common lead.

Atsushi while relates to a similar design teaches (see figures 2, 4, and 5) a lead having a bent section 5a formed inside the opening and adjacent to an edge of the opening in order to disperse stress due to heat and pressure in bonding (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Atsushi's teachings to Niki et al.'s and Michii's devices by forming the bent portions in the middle portion of the common leads, adjacent to an edge of the opening of the flexible substrate in order to disperse stress.

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7. Claims 41-43 and 45, are rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura (5,585,666).

Imamura discloses (see figures 3-4) a flexible substrate 60 having an opening 52b formed therein, comprising: a common lead 61 having a middle portion being continuously positioned inside the opening, and both end portions of the common lead 61 being formed on the flexible substrate 60; two bent portions being formed in the middle portion of the common lead 61, and adjacent to an edge of the opening of the flexible substrate. Although Imamura does not label the bent portions as a "stress absorbing portion" as applicant claimed, applicant's claimed structure in claims 41-43 and 45, does not distinguish over the Imamura reference and it has been held that a recitation (e.g., stress absorbing of the bent portions) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

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Response to Arguments

8. Applicant's arguments filed on August 31, 1999 have been fully considered but they are not persuasive. Specifically, applicant argues, at page 6 of the Remarks, that Niki and Michii references (recited art) do not suggest any change in sizes of the common leads so the claimed structure (i.e., claims 30 and 40) would not have been obvious over Niki and Michii. In response, the examiner acknowledges that Niki and Michii references (the cited art) do not disclose the power source pads being larger than the signal pads. However, a change in size (e.g., the power source pads) is generally recognized as being within the level of ordinary skill in the art.

Conclusion

9. Applicant's arguments filed on August 31, 1999 have been fully considered but they are not persuasive (i.e., claims 30 and 40) and are deemed to be moot in view of the new grounds of rejection (i.e., the underlined portions of claims 24-25, 32-36, 41-43 and 45-47 raise new issues that would require further consideration and/or search). Therefore, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

11 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink that reads "Tom Thomas". The signature is written in a cursive style with a horizontal line above the first "T" and another above the second "T".

TOM THOMAS
SUPERVISORY PATENT EXAMINER

Luan Thai

February 23, 2001